

REMARKS

Favorable reconsideration and allowance of this application are requested.

By way of the amendment instructions above, several claims have been revised in an effort solely to improve their syntax. Such claim revisions therefore are unrelated to the issue of patentability and are submitted merely for reasons of form.

The issues raised by the Examiner under 35 USC §101 with respect to prior claims 17-19 are believed to be mooted by the amendment instructions above.

Claims 20-23 are new and define the combination of a gas chromatographic system which comprises the claimed modulator. In this regard, claims 20-22 are in independent form and are based substantively on claims 17-19, respectively, while claim 23 is in dependent form and claims a gas chromatographic system which comprises a modulator as in claim 1.

Claims 1-23 are thus pending in this application for which favorable reconsideration and allowance are requested.

The only issues remaining to be addressed in this application are the Examiner's rejections advanced under 35 USC §103(a). In this regard, prior claims 1-8 and 16-19 attracted a rejection under 35 USC §103(a) as allegedly being "obvious", and hence unpatentable, over Beens et al in view of Klein et al, while Ledford et al has been combined with Beens et al and Klein et al to reject prior claims 9-15 under that same statutory provision.

Applicant notes at the outset that the principal publication applied by the Examiner – namely, Beens et al – is inappropriate as a reference against the present invention as it does not rise to the status of "prior art". In this regard, the Examiner will observe that the present application is the U.S. National Phase of PCT/IB01/02253 filed on November 28, 2001 ("the '253 PCT application"), which in turn is based on priority application PCT/IT00/00532 filed on December 19, 2000 (hereinafter "the '532 priority

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application"). The certified copy of the '532 priority application should already be in the file of the subject application by virtue of PCT Rule 17.2(a).¹ For the Examiner's convenience, copies of the published '253 PCT application and the '532 priority application, each of which is in the English language, are attached hereto.

It will be noted therefore that the present invention enjoys a priority date of **December 19, 2000** via the '532 priority application which is ***before*** the effective date of the applied Beens et al publication. As such, Beens et al is ineffective as a prior art reference and must be withdrawn.

Applicant further notes that neither Klein et al nor Ledford et al cure the substantive deficiencies of the Beens et al publication as neither discloses or suggests the subject matter of the presently pending claims.

In this regard, applicant notes that Klein et al discloses an automated on-column injection into a GC chromatographic device, wherein a capillary column is positioned within a heated oven. For cooling the oven to a temperature below room temperature, a coolant fluid (liquid CO₂ or liquid N₂) is provided from a source through a valve into the oven. The valve aperture is regulated by a temperature sensor located in the oven.

Ledford et al relates to a jet cooled thermal modulator representing the state of the art prior to the present invention. In fact, Ledford et al is mentioned at page 5, lines 9-21 of the subject application. Ledford et al discloses a cooling technique by using a jet cooled thermal modulator for comprehensive two-dimensional gas chromatography. Accordingly, a spot of the first dimension column is cooled with a stream of cool gas through a copper tube having a slot aperture at its end (slotted nozzle) and a heater sweeps over the cold spot for heating it.

According to another technique disclosed in Ledford et al, the use of moving parts in the oven is eliminated by a two stage gas jet modulator, namely by means of

¹ Written confirmation that the certified priority document was in fact received in this National Phase application from the International Bureau will be appreciated.

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pulsing cold and hot jets of gas onto a modulator tube with solenoid valves.² Such two-stage jet modulator has the disadvantage that very high air jet temperature cannot be reached which sets limits to the maximum oven temperature and, therefore the range of applications covered by such a system.

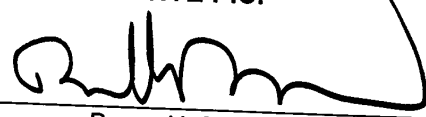
The disadvantage of the cooling technique by the jet cooled modulator of Ledford et al is that it has moving parts within the oven and ice is formed during operation. In contrast to the jet-cooled modulator of Ledford et al, the modulator according to the present invention does not necessarily contain moving parts within the oven, and as such, column breakage is prevented. Furthermore, an enhanced focusing of the trapped fractions is achieved.

In view of the amendments, attachments and remarks presented herewith, applicant suggests that this application is in condition for prompt allowance and early Official Notice to that effect is solicited.

Respectfully submitted,

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² The description appearing in the subject application at page 5, lines 9-18 is to such other technique of Ledford et al.